

The Mining Journal

Established 1835

Railway & Commercial Gazette

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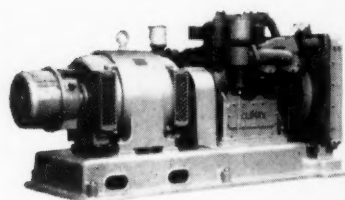
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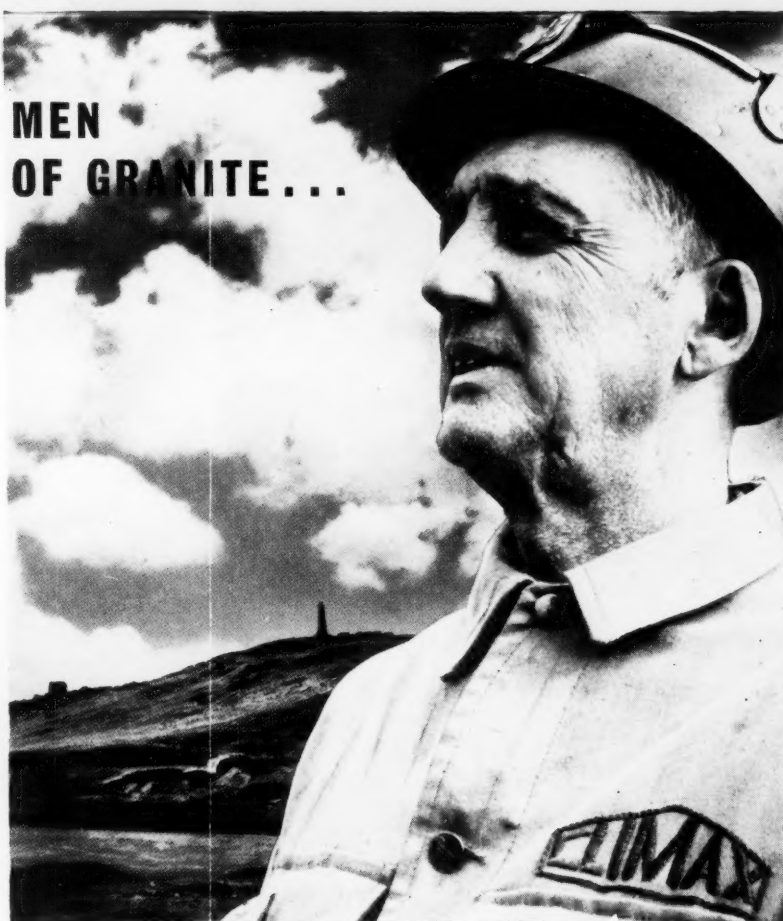
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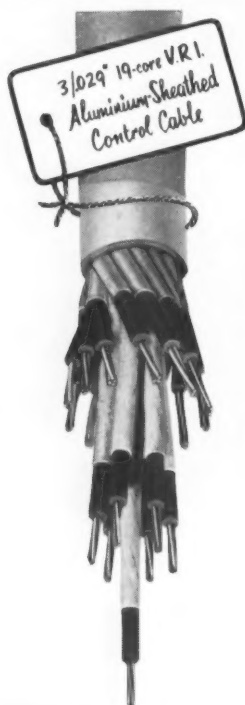
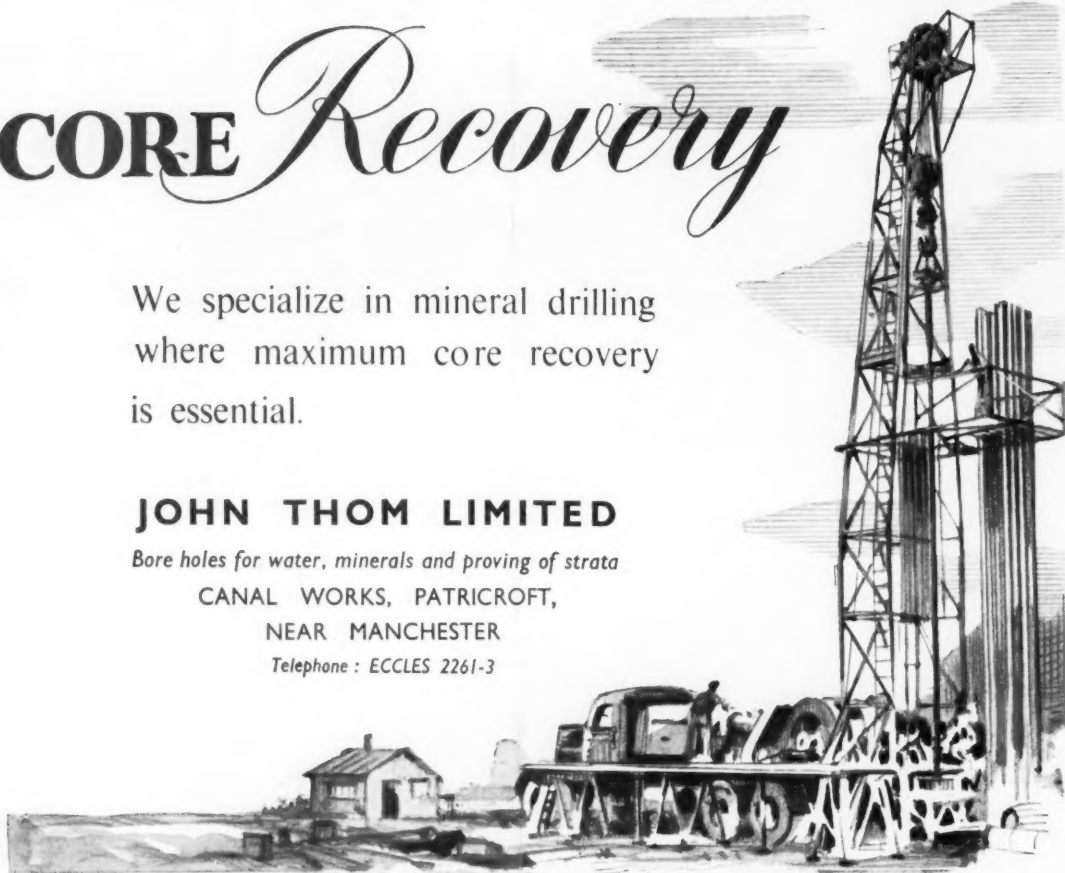
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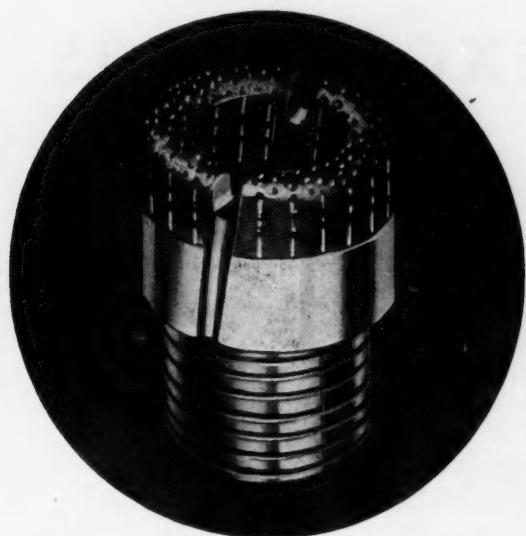
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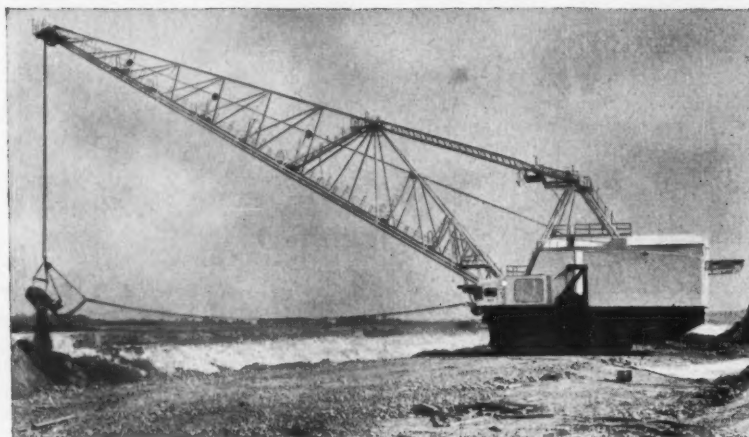
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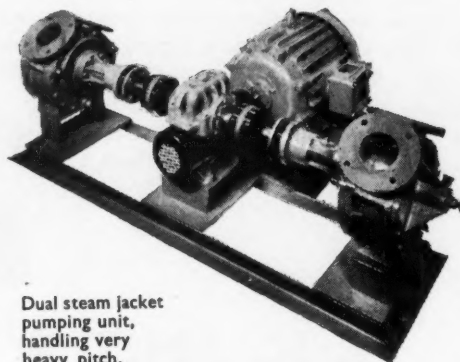
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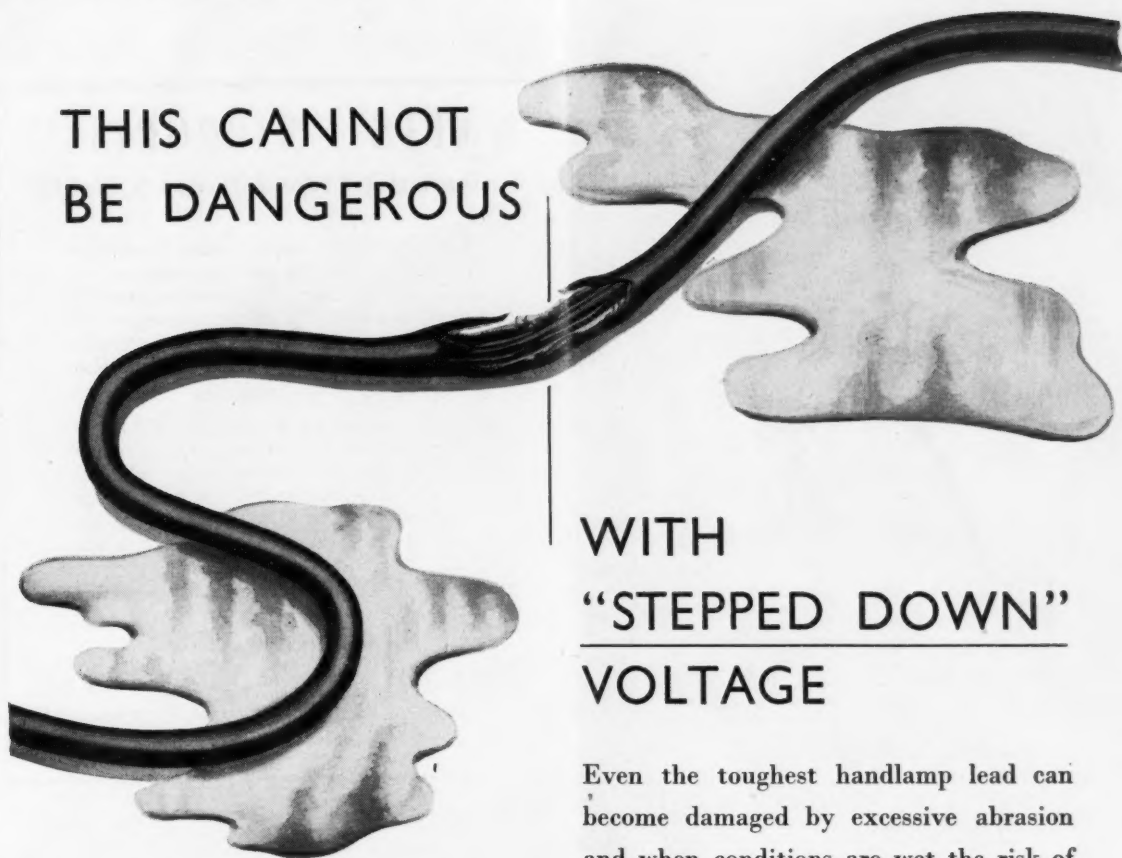
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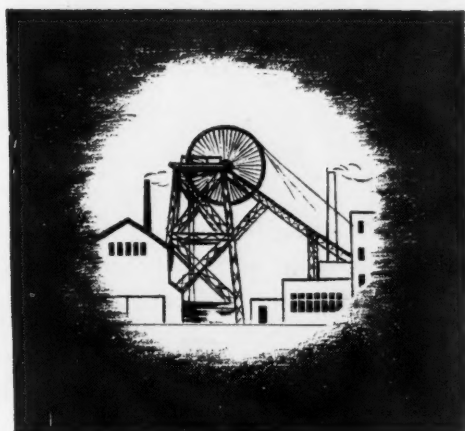
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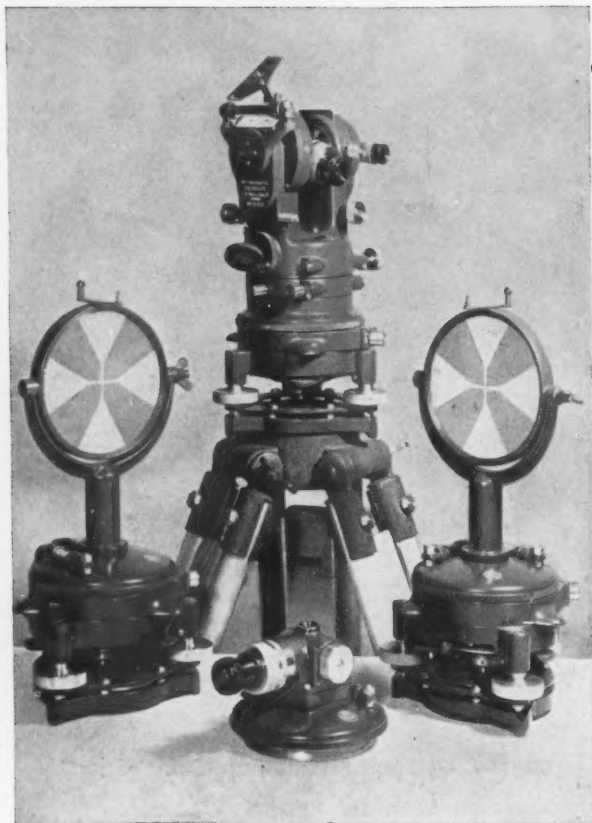
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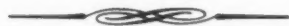
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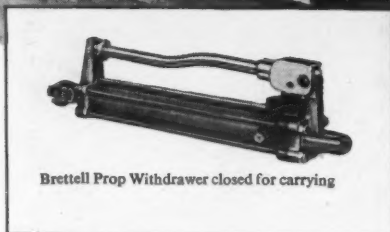
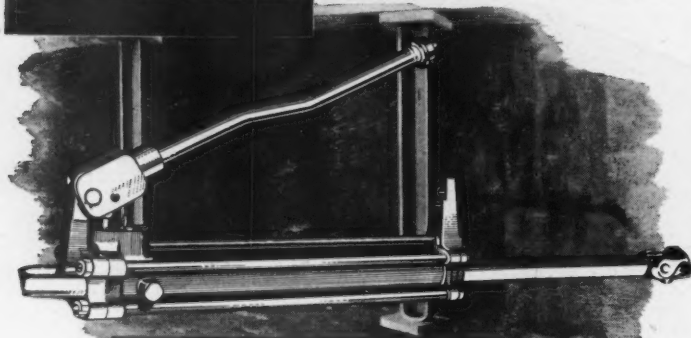
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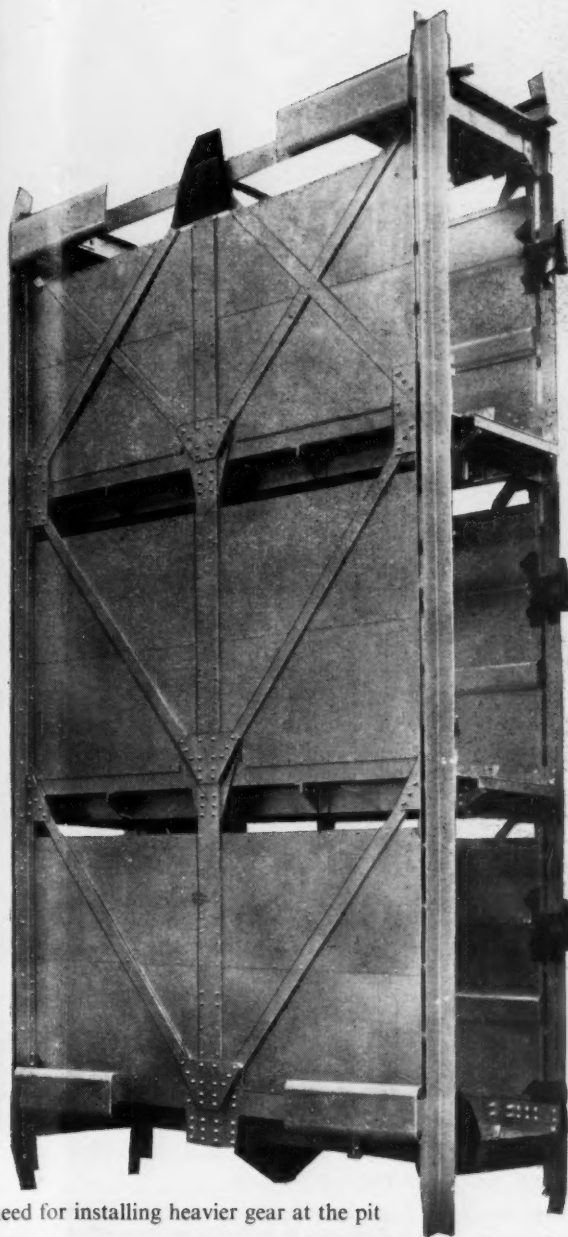
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Vol. CCXLIII No. 6209

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NOTES AND COMMENTS

Re-organization of the U.S. Bureau of Mines

The five-day survey team headed by Dr. Curtis L. Wilson, Dean of the Missouri School of Mines, appointed by the U.S. Secretary of the Interior last November to survey the organizational character of the U.S. Bureau of Mines has now submitted its report.

Essentially, the team has made four basic recommendations which, if implemented, will materially change the administrative structure of the Bureau of Mines. These four basic recommendations, underlie 39 detailed recommendations, and were summarized by the survey team as follows: (1) "That the number of regions be reduced from nine to four. (2) "That administration of health, safety and coal mine inspection activities be separate and apart from scientific and technical research activities. (3) "That there be a co-ordinated strengthening of all statistical and commodity analysis work. (4) "That a plan of organization be adopted under which the Washington office retains responsibility for policy and programme determination, while conduct and management of research are decentralized."

In connection with the last point, provision is also to be made for a new position of deputy director of the Bureau of Mines and an assistant director for health, safety in coal mine inspection, and an assistant programme director.

Of immediate importance is the recommendation that the Bureau should do everything possible to terminate its production activities, such as those connected with titanium, zirconium, and helium.

With regard to titanium, which the Bureau is producing on a commercial scale in its pilot plant at Boulder City, Nevada, the team recommends that its production should be discontinued as soon as possible, consistent with national security. The situation with regard to zirconium is analogous to that of titanium, the Bureau's plant at Albany, Oregon, producing zirconium primarily for the Atomic Energy Commission, and the team recommends that when private industry can supply sufficient tonnages of satisfactory quality the Bureau should discontinue its production.

The Secretary for the Interior, Mr. Douglas McKay, has

approved the report and has transmitted it to the Director of the Bureau of Mines for implementation, so that apart from minor modifications it is more than likely that many of the recommendations will become effective before the end of this year.

Northern Rhodesian Mining in 1953

The Northern Rhodesian Mines Department's report for 1953 by the new chief inspector, Mr. L. M. Serfontein, contains much of interest, much of which, however, has already appeared in our Annual Review number of last May. Inevitably the copper industry largely monopolizes the stage; of a total value of £94,951,877 of mineral production copper accounted for £89,896,447 or just under 95 per cent. With a total recovery of 362,580 tons Nchanga contributed 109,325 tons, Roan Antelope 93,683, Nkana 80,005, and Mufulira 79,567 tons. Among rare metals associated with copper, cobalt, in terms of metal, was produced only by Nkana to the amount of 841 tons, and selenium to 46,320 lb. from the slime residues in electrolytic refinery. Zinc production, of which 17,004 tons was electro, improved to 25,330 tons compared with 22,890 in 1952, but lead declined from 12,600 to 11,510 tons. Other metalliferous outputs were insignificant and in the case of tin the output was only 10 tons of concentrates compared with 15.5 tons in 1952 as several shows closed down when the price fell in the spring and early summer.

The important question of power supply is noted only briefly: of the total of 372,906 h.p., pulverized coal yielded 178,470 h.p., waste heat gases 142,148 h.p. and wood 1,326 h.p. Fuel shortages adversely affected copper production but not so much as in 1952. It is, nevertheless, in the copper industry, where big extensions are now being promoted, that the fuel outlook mainly causes anxiety.

It is, however, in relation to labour conditions that the Report is disappointingly, if understandably, meagre. The issue is fundamentally a socio-political one and there were no outstanding developments during the year which the Report covers. Mr. Serfontein notes, however, that while Europeans at the mines showed a steady increase in numbers Africans engaged declined in the last two months

of the year, the numbers at the end being 6,784 and 46,587 respectively, the ratio being 6.87 to 1 at the end of the year compared with 7.58 to 1 12 months earlier. The wages of Africans increased for the eighth successive year to £6 10s. per month for underground and £5 19s. 7d. for surface workers with about one third added for rations. Wages and bonuses paid to European employees totalled £9,965,780 which works out at £1,528 per head for the average of 6,522 in service during the year, or say £127 per month. With the growing strength of the African Mineworkers' Union, estimated at 22,000-23,000 members, and their increasing realization of their importance to the progress of the Central African Federation, their demands for a closer approximation of the two rates of pay is hardly surprising.

Silicosis is present in Northern Rhodesia as in most other mining camps: out of 3,833 Europeans and 24,622 Africans employed in the copper mines examined during the year 16 Europeans and 73 Africans were certified as new cases of whom 4 Europeans and 63 Africans had not worked elsewhere. Fatalities underground were 2.05 per 1,000 for Europeans and 2.13 for natives, the respective totals being 1,880 Europeans and 15,522 natives.

Uganda—Progressive Advancement of Mining Operations

Uganda is a Central African territory with the prospect of progressive advance as a mining field. This was indicated in the review of last year's operations in our Annual Review number of last May.

While at present production is small there are a wide range of minerals which are being examined and prospected and there is the big copper, cobalt and ilmenite undertaking of Frobisher which should be linked by rail next year and come into production in about two years' time. The Geological Survey staff of the Protectorate last year consisted of over 20 members beside the director, Mr. Cawley, and assistant director, and much geophysical and mapping work was carried out. Mineral exports during the year represent the present scale of production and were as follows, in tons, except gold, which is shown in oz.:

Mineral	1952		1953	
	Quantity tons	Value £	Quantity tons	Value £
Amblygonite ...	—	—	20.00	900
Beryl ...	—	—	32.56	6,047
Bismuth ore ...	3.58	3,173	3.01	3,116
Columbite-tantalite ...	4.06	4,788	10.51	15,057
Galena ...	2.00	252	—	—
Gold ...	201.25	2,374	510.79	5,837
Tin ore ...	154.37	107,188	128.68	70,845
Wolfram ...	131.81	228,299	158.11	166,692

Though production of columbite-tantalite is very small it is increasing and prospecting was very active: over a belt of country in Western Ankole extending into Kigezi and covering 100 miles in length by 20-30 miles in width the mineral has been found at scattered intervals. Tin-wolfram activity necessarily reflects the course of market prices.

Vermiculite associated with iron ores has been found near Bukusu in the district of Inbale where good quality mineral was found to a depth of at least 30 ft. At Buranga hot springs a bore was put down to 578 ft. in the hope of tapping geothermal steam generated by the Rift Fault, but without success, and a deeper bore designed to strike structures confining steam at greater depths has been started. The investigations like those in New Zealand and Iceland have no doubt been suggested by the Italian success in turning such occurrences to economic account at Lardarello in Tuscany. There is also potential importance attaching to observed occurrences of pyrochlore and a great tonnage was proved by the Tororo Exploration Company.

Mexico

(From Our Own Correspondent)

Mexico City, August 6.

The Mexican mining industry appears not to have been greatly affected by adverse conditions during the first four months of the current year, according to the Department of National Economy. Volume of production period did not fall off sharply from the previous year, and this held true for gold, silver, copper, lead and zinc.

Total value of production of the five principal metals of the Mexican mining industry for January-April of this year came to 568,885,253 pesos (slightly over 15,000,000 guineas in round figures), a 6 per cent drop over the same period in 1953, which reported a value of 603,645,092 pesos (over 23,000,000 guineas at the former rate of exchange).

Drop in production-value of gold and silver reflects a drop in production. Increase in production of copper has been apparent in the first third of the year, due to increased prices received in metals markets.

Drop in lead and zinc production value is due to lower quotations for these metals for lead and zinc mines have been averaging same production figures of past years.

It is said in mining circles here that the drop in the value of lead and zinc production, which represents approximately 70 per cent of total value of Mexican mining production, is affecting the industry adversely. From 1952 to 1954 the value of lead has fallen off around 40 per cent and that of zinc by 42 per cent.

Therefore the news of recent U.S. Government proposals for compensatory measures to aid domestic lead and zinc producers in place of tariff increases has been received with considerable hope here. Mining circles believe the measure would aid Mexico, as well as other lead and zinc producers such as Canada and Peru.

Nacional Financiera, the semi-official credit institution, commended President Eisenhower's policy of opposing tariff hikes, in favour of new government purchases under the stockpiling programme for strategic materials. Nacional Financiera pointed out that this policy has been the "most important factor" in the recent improvement of lead and zinc prices currently quoted at 14 and 11 c. respectively.

U.S. producers believe that stockpiling is only a temporary stimulus, but Nacional Financiera concluded by stating it is believed the U.S. is seeking the adoption of other measures to provide further assistance to national industries although adhering to its announced policy of resisting tariff increases under the escape clause.

Mexican lead and zinc producers fervently hope that the U.S. will follow through on its current metals proposals for this would eliminate the constant "crisis" status of mine managements.

One trend has been noticed in the past several months: a greater interest by U.S. mining companies in purchasing Mexican mineral deposits. Eduardo Muñoz Abrego, mining engineer of San Luis Potosi, reported that the Altar Consolidated Mining Company has purchased a mercury mine in the Villa de Guadalupe district and is also making offers for other properties.

The San Luis Potosi mining industry has been in a slump for some years now, but Abrego said that the new interest is indicative of an "improvement." It is claimed that U.S. companies are dickering for cobalt, mercury and fluor spar mines in the State. The investment in Mexican mining properties is apparently expanding to other areas too, although the Department of National Economy refused to comment on the extent of this influx of foreign capital.

Exploratory Boring for Minerals

By A. NELSON, M.Eng.

The role of the geologist and the pattern of borehole drilling programmes are broadly discussed in the following article by way of notes on the contributions made by geologists to the discovery of new mineral fields and on boring programmes in the search for minerals.

Geological lore, acquired over the years, has evolved a number of important generalizations concerning the occurrence of minerals in rocks of certain structures or geologic age. Geological age is naturally of primary importance in the search for sedimentary deposits of value, but is less so in the case of metalliferous deposits. Due to age considerations, a certain terrain may be completely eliminated, or the greater part may be eliminated as unimportant and the remainder classed as the critical area. The prospector endeavours to restrict his examination to critical areas rather than search, more or less indiscriminately, over a large field. In general, exploratory boring is confined to critical areas. The "favourable formation" of the prospector is a recognition, perhaps inadequately expressed, that certain rocks or certain structures, are more favourable than others.

To the structural geologist, landscape features possess a meaning and contribute their part to the structure of the whole. He realizes that the varied land forms are not just a jumble of hills and dales, but that they possess a plan or pattern underlying their shape and disposition. Bedded deposits of value are not infrequently covered by glacial drift and no near-surface exposures are available. The presence of such deposits can be established only by boring, or deduced by an intelligent appreciation of structural conditions aided, perhaps, by distant exposures. The amount of exploratory boring required is generally at a minimum with uniformly bedded minerals such as certain stratified ironstones and coal seams, and at a maximum with "patchy" or irregularly distributed minerals as for example gold ores. Mineral reserves in the case of stratified ironstone and coal are often sufficiently established by occasional boreholes supplemented by stratigraphical deductions from exposures as at outcrops or neighbouring mines.

DRILLING AS VERTICAL EXPLORATION

The structural geologist has rendered invaluable service to the oil and coal industries. In these spheres of prospecting, many rich fields and substantial extensions to known fields, would have remained undiscovered were it not for the geologist's faith and vision. The search for minerals is leading to deposits at greater depths than hitherto worked. As exploratory boring becomes deeper and deeper, the problem of sub-surface structure becomes more and more complicated, due (1) to changes in the deformation of rock sheets at depth and (2) to the difficulties of controlling drilling at such depths. In these circumstances, geologists become involved in studies of the obliquity of boreholes and the interpretation of the cores which are obtained under such conditions. In modern exploration, emphasis is rightly put on lithological accuracy and the structure must be portrayed with reasonable exactitude. In short, the geologist endeavours, by all possible methods, to obtain a three-dimensional picture of the whole terrain and ultimately this is the only picture that counts.

Drilling is viewed by the geologist as vertical exploration. His ultimate objective is a picture, wherein the length and breadth are obtained mainly by surface mapping and depth is the result of intelligent deductions guided by the careful interpretation and correlation of borehole data.

Each new bore will increase the accuracy of the picture and as the sub-surface data accumulates the superficial geology may need revision. In this way, the geologist builds up his picture on similar lines to a draughtsman, by projecting views or data from one plane to another and all must be correctly correlated. Invariably, the geologist is pitted against lack of data and in consequence has to employ all possible techniques, such as geophysical methods and boring to obtain evidence.

GEOLOGISTS AND OIL DISCOVERY

Although the more obvious oilfields, of a relatively shallow nature, have largely been exhausted, the rate of oil discovery has not diminished—in fact the percentage of failures has tended to be lower than in earlier periods. One would anticipate that with the exhaustion of the more obvious oil belts, the percentage of failures in exploratory boring would have tended to increase. That it has not occurred is primarily due to the competence of the oil geologist in the campaign of discovery and to the closer co-operation between the geologist, chemist, geophysicist and boring engineer in carrying out the work. The achievements of the engineer in oil well drilling have been phenomenal. Within the last two decades, he has doubled and even trebled the depth of economic drilling, making it possible to drill wells of over 5,000 ft. in less than a fortnight and of two miles in less than three months. In spite of the difficulties and the gradually mounting cost of materials and labour, the drilling costs per ft. have steadily decreased.

During the earlier part of the present century, a few far-sighted oil geologists suspected that there was an enormous wastage of oil at depth and many were of the opinion that the efficiency of recovery seldom exceeded about 25 per cent of the total oil pool. As a result of scientific research, there has been a revolution in production planning and methods with a marked improvement in the percentage of oil recovery. Modern exploitation schemes have removed many of the evils of unbalanced production and the new objective is one of controlled recovery. The close association of the oil geologist with drilling samples forced him at a relatively early period to improve such procedure. Consequently, special coring devices have been developed and, with the addition of wall samples and other appliances, the reliability of the borehole evidence has now materially improved. The trend is to improve the virtuality of holes and to obtain critical evidence at key sections with the aid of special equipment. Manifestly, the question of costs cannot be ignored and methods must be devised which will yield the maximum of information at a reasonable cost.

BOREHOLE POSITIONING AND PLANNING

Exploratory boring implies the putting down of a number of boreholes at critical positions with the object of gaining the maximum possible information on the stratigraphy and structure of the area. When boring for exploratory and sampling purposes, a good deal of preliminary work is necessary before the number and position of boreholes can be decided upon. This work is most essential to avoid an ill-planned boring programme. A

single borehole will determine the vertical distribution of the mineral deposit at that point. A number of boreholes spaced along a line will determine the vertical and horizontal distribution of the deposit along that line. Finally, a number of boreholes spaced at the intersection points of co-ordinates will, collectively, yield data from which the approximate continuity, quantity and average value of the deposit may be determined.

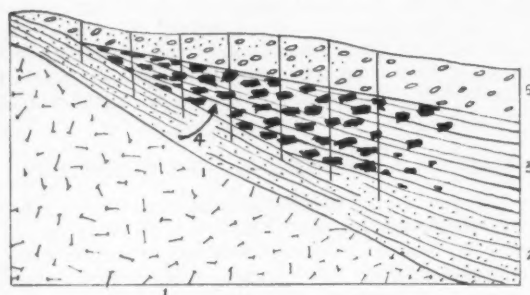
The continuity of a bedded mineral cannot be viewed as an abstract factor. For example, continuity within the limits of boreholes located at the corners of squares or triangles, takes into consideration the type of deposit, strength, persistency of mineralization, geological abnormalities or other limiting features. In the case of a coal seam, its continuity is a measure of known or reputed consistency, its disturbance pattern and the nature of the overlying and underlying strata. Continuity is one of the troublesome factors in mine sampling, in estimating workable reserves and in the valuation of coal and mineral properties. A reasonable assessment requires experience and a sound background of knowledge relating to the local disturbance pattern or idiosyncrasies of the deposit involved.

For delineating the extent or for sampling bedded deposits of a fairly uniform nature, the boreholes may be evenly spaced over the whole area either at critical points or at the intersection points of co-ordinates, thus dividing the area into squares. A modified pattern is to put down the holes at the corners of approximate equilateral triangles. This is, theoretically, the ideal spacing since the corner boreholes of such a triangle are all equidistant from one another, which is not the case with the corners of squares. The closeness of the borehole spacing, with either method, is governed by the extent of the area, the type of deposit and its degree of certainty or uncertainty. In the case of known or semi-proved fields of coal or stratified minerals, continuity may be sufficiently established by occasional boreholes or even by geological deductions from neighbouring mines. From the sampling aspect, the greater the range of borehole results, the greater is the number of holes required to yield reliable data.

Inclined or angle holes put down by means of a diamond drill, are occasionally advantageous, particularly in the case of steep deposits, or where for example, an inclined borehole can be drilled from a site onshore to penetrate mineral formations offshore. Again, cases may occur where several angle holes can be drilled from one derrick position. This may be economically necessary in rough undeveloped regions or in V-shaped valleys.

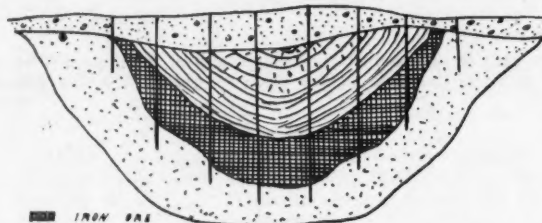
EXPLORATORY BORING FOR MINERALS

Many of the haematite ores in the Mesabi Range, Minnesota, U.S.A., are covered by a thick layer of glacial drift. The topography is subdued, varying from flat to gentle



Typical structure of haematite ores in the Mesabi Range, Minnesota. 1—Granite. 2—Quartzite. 3—Limestone. 4—Haematite ore. 5—Glacial drift.

undulations. The few surface exposures disclosed the presence of the ore and its further delineation was readily made by shallow boring with an occasional test pit. The



Section through Lake Superior Iron Enrichments

continuity of the ore to the dip was important data to be established. The boreholes were put down at 200 or 300 ft. intersections of a co-ordinate system.

The Lake Superior iron enrichments usually occur under a mantle of glacial drift. The largest among them are shallow masses of somewhat irregular outline of considerable length and of moderate width and thickness. Other masses occur with a steep dip or are moulded in pitching troughs. The mineral itself grades from hard compact layers of high quality to sandy deposits necessitating concentration by washing. In most cases, the boreholes at Lake Superior were sited at the intersections of N.-S. and E.-W. co-ordinate lines spaced at distances 300 ft. apart. Where the deposits were steep, angle holes were put down in positions one behind the other in line across the formation. The holes were set off at regular intervals and were mostly from 300-400 ft. deep, though some reached 1,000 ft.

CHURN DRILLS IN ARIZONA

Churn drills have been employed extensively in the exploration of the disseminated-copper deposits of Arizona and elsewhere. These copper enrichments mostly lie under a leached capping some 100-200 ft. thick. The deposits are from 150-500 ft. thick in the centre of the field, with diminishing thickness at the confines. The whole belt of mineralization generally extends horizontally over large areas and embraces some millions of tons of ore averaging from one to two per cent of copper. In the case of disseminated-copper deposits, the boreholes put down to estimate the reserves, are usually fixed at the corners of squares formed by regular co-ordinate lines 200 ft. apart, although this distance varies with local conditions and requirements. The boring programme may involve the drilling of more than a hundred holes to a depth varying between 200 and 1,000 ft. The topography is always an important factor in the general layout of the boreholes.

DIAMOND DRILLS ON THE COPPERBELT

In Northern Rhodesia, immense areas of bedded copper ore were delineated by boreholes. The beds, some 30 ft. thick, were proved to be regularly disposed in outcropping synclines. The average copper content was uniform over long stretches. The boreholes were spaced 1,000 ft. or more along the strike, but at closer intervals across it. The depth of the majority was well below 1,000 ft., the maximum being below 2,000 ft. On the Northern Rhodesian field, although the preliminary exploration was carried out by churn drills, considerable use was also made of the shot-drill and diamond drill, both for exploring and sampling purposes. Experience gained in this field, as between diamond drilling and shot drilling, was that though the latter was cheaper, it did not permit such nicety in the computation of results as did diamond drilling.

The mineral reserves in the case of shallow tin and gold alluvials can normally be explored and tested, within ordinary business risks, by boring at fairly close intervals. With such valuable sediments this procedure is not too costly. In fact, some of these deposits are so near the surface that in the absence of water difficulties, the mineral contents may be appraised by trenching or pitting. Where the structure permits, test pits are manifestly more satisfactory than boreholes on account of the substantially greater bulk of gravel available for washing and testing. Fissure deposits of copper, gold, silver and similar ores cannot usually be satisfactorily established by boreholes and development by mine workings is generally a preliminary step to valuation. In the case of deep-seated auriferous deposits, such as those in the Transvaal, though

the continuity of such deposits throughout an area may be established by boreholes, no reliable estimate of their mineral content can be made until a large initial exposure, by underground roadways, has been closely sampled and this necessity for close sampling persists right to the end.

With the exception of the diamond drill, which can be used to drill in all directions, boring methods are restricted to vertical holes. The chilled-shot drill can, however, be used for inclined holes at moderate angles from the vertical. Horizontal and inclined diamond drill holes over 300 ft. in length are liable to deviate badly in both horizontal and vertical planes. Holes which are drilled vertically may also deviate but not usually to the same extent. Thus the drilling depth is rarely the vertical depth and the position of the bottom of a deep hole is problematical.

European Coal Production and Other Sources of Power

The general trend towards the use of oil and natural gas in the United States in preference to coal as a source of power and its serious effect on the U.S. coal mining industry was the subject of comment in last week's issue under "Notes and Comments." In the following article the position of liquid and other fuels vis-a-vis coal as a power source in Europe is discussed and the conclusion reached that solid fuels will remain the predominant source of energy for many years to come.

The present production level of all European countries in 1952 and 1953 as compared with 1937 and 1938 can be seen from the Table below, which is compiled from Statistics of the Coal Committee of the Economic Commission for Europe in Geneva. The pre-war level of 571,000,000 tons was reached by Europe as a whole for the first time in 1951. The two greatest European coal producing countries, however, Great Britain and Western Germany are still lagging somewhat behind their 1937/38 production figures. Holland has also difficulties in achieving her full pre-war production. On the other hand, France, Spain, Poland and Czechoslovakia have considerably surpassed in the last years their 1937/38 levels. For comparison the figures for U.S.A. and U.S.S.R. are also given below.

As regards 1954, the Coal Committee in Geneva has recently estimated that a total production of 621,000,000 tons of hard coal may be required to satisfy the present needs. Of this figure about 500,000,000 tons should be produced in Western Europe, chiefly by Great Britain and the European Coal and Steel Community and 121,000,000 in Eastern Europe, here mainly by Poland—93,000,000 and by Czechoslovakia—22,000,000 tons.

There would still be a deficit in the requirements of Western Europe of 11,000,000 tons, which would have to be met by supplies from U.S.A. and Poland.

It took several years for most of the European coal producing countries to recover gradually from the war dis-

ruptions caused in the working of the mines as well as in the field of manpower and labour relations. In some of them the reconstruction process has not been terminated yet. It is well-known that the coal mining industry requires costly medium and long time modernization and development schemes, and it is in the nature of that industry that quick results cannot always be forthcoming. Besides different geological and technical conditions which have to be coped with, complex questions of manpower and skilled labour and productivity, which also vary widely in different countries, have to be tackled and solved. It takes usually eight to ten years for a new mine to begin to be productive.

It is therefore, not surprising, although most regrettable, that the European coal industry could not play its full proper part during the first years of post-war rehabilitation and reconstruction, as it certainly would have wished. It was unable to satisfy all the European import requirements of solid fuel as it did in pre-war years. These imports amounted in 1937 to 103,000,000 and in 1938 to 89,000,000 tons, including coal for bunker purposes. They fell in 1952 to 83,000,000 and in 1953 to 74,000,000 tons, including in 1952—20,500,000 and in 1953—7,500,000 tons of coal imported from U.S.A. Still a gap of 20,000,000 and 15,000,000 tons or 20 per cent and 16 per cent respectively as compared with pre-war remained unfulfilled.

With the greatly expanding post-war industrial activity in Europe other sources of energy had necessarily to come

HARD COAL PRODUCTION (in millions of tonnes)

	Gr. Britain	West Germany	Poland	France	Saar	Belgium	Holland	Czecho- slovakia	Other Europe (a)	Total (b)	U.S.A. (c)	U.S.S.R. (d)
1937	244.3	137.6	66.0	44.3	13.4	29.9	14.3	16.8	4.4	571.0	451.2	127.0
1938	230.6	136.9	69.4	46.5	14.4	29.6	13.5	15.8	8.7	565.4	358.0	133.0
1952	230.0*	123.3	84.4	55.4	16.2	30.4	12.5	20.3	15.1	587.6	457.7	300.7
1953	227.8*	124.5	88.6	52.6	16.4	30.0	12.3	20.3	15.3	587.8	436.9	320.0

* Including 12 million open cast coal.

(a) Austria, Ireland, Sweden, Italy, Yugoslavia, Portugal also Spain, which alone accounted in 1938 for 5.7 million and in 1953 for 12.1 million tons.

(b) Not including Bulgaria, Eastern Germany, Hungary, Roumania, totalling in 1953—6 million tons and Turkey in 1953—5.6 million tons.

(c) Bituminous coal, lignite and anthracite.

(d) Of which estimated in 1938—20 million tons and in 1952—71 million tons of brown coal.

HEAT AND MOTIVE POWER CONSUMED
AS PERCENTAGE PROPORTION OF TOTAL OBTAINED*

		Solid fuels	Fuel wood	Liquid fuel	Natural gas	Hydro- electricity
EUROPE (excl. U.S.S.R.)	1929:	89	6	3	0	2
	1949:	82	5	9	1	3
U.S.A.	1929:	37	3	49	10	1
	1949:	26	3	45	25	1
SELECTED COUNTRIES						
Sweden	1929:	54	32	6	—	8
	1949:	38	17	24	—	21
	1949:	47	14	7	—	32
Norway	1929:	25	10	20	—	45
	1929:	68	15	6	—	11
	1949:	46	12	19	4	19
Switzerland	1929:	64	8	8	—	20
	1949:	35	7	21	—	37
	1949:	84	8	4	—	4
Austria	1929:	75	9	4	3	9
	1929:	91	4	3	—	2
	1949:	81	5	11	—	3
Holland	1929:	93	—	7	—	—
	1949:	83	—	17	—	—
	1949:	98	—	2	—	—
Belgium	1929:	93	—	7	—	—
	1929:	95	—	5	—	—
	1949:	90	—	10	—	—
U.K.	1929:	96	2	1	—	1
	1949:	93	3	3	—	1
	1949:	88	7	2	3	—
W. Germany	1929:	95	2	2	1	—
	1949:	95	2	2	1	—
	1949:	95	2	2	1	—

* Economic Survey of Europe in 1951—Corrected version—Geneva April 1952

in to help to satisfy the ever increasing requirements. Thus, the proportionate share of solid fuel as source of power fell steadily, in favour of hydro-electricity, natural gas and liquid fuel.

OTHER SOURCES OF POWER

It will be noted from the above figures that already in 1949 in Europe the share of solid fuel as source of heat and motive power was only 82 per cent and the share of oil nine per cent. Hydro-electricity accounted for three per cent and fuel wood for five per cent. Since then the proportion of oil and natural gas has probably risen to about 15 per cent and the share of solid fuel will be about 75 per cent.

In U.S.A. where the process was almost accomplished before the war, owing to the rich natural indigenous resources of oil already in 1929, liquid fuel alone accounted for 49 per cent in the power balance sheet and solid fuel for 37 per cent only. In 1949 natural gas rose to 25 per cent leaving for solid fuel a share of 26 per cent only.

As regards the few selected European countries it is interesting to discern three groups of countries. The first group are the net coal importing countries with almost no coal production of their own but possessing great resources of hydro-electricity, fuel wood, or natural gas viz: Sweden, Norway, Switzerland and Italy. In these countries the proportion of solid fuel in 1949 was about 30-40 per cent, the share of oil around 20 per cent tending to increase still further and that of hydro-electricity 20-40 per cent.

The second group comprises coal producing and simultaneously importing countries, namely, France, Holland and Belgium. Here in 1949 the share of solid fuel was 80-90 per cent and that of oil ranged from 7 to 17 per cent with a marked tendency, especially in France, to rise substantially.

The third group consists of the major coal producing and exporting countries: Great Britain, Germany and Poland, where the proportion of solid fuel in 1949 was still 90-95 per cent. However, in Great Britain the percentage of oil for home consumption and bunkering purposes had already in 1949 reached 10 per cent and the present trend is decidedly in favour of oil as one of the additional sources of power.

This trend towards other complementary indigenous sources of power as hydro-electricity and natural gas which started before the war, was hastened during war-time and in the immediate post-war period through the then acute coal shortage in Europe.

To these there is now to add as a major source the increasing imports of black oil from the rapidly expanding vast oilfields of the Middle-East countries. Geographically they are situated very conveniently to most European countries and the products are easily transported to and refined in the consuming countries, providing a most appreciated and competitive addition to the existing traditional supplies. Oil and its products are being marketed and distributed in a very able manner by the powerful World Oil Companies, who claim that already one-third or more of the world energy is being derived from oil and natural gas. They predict that in 25 years the world consumption of oil will increase two and a half times from 600,000,000 tons to 1,500,000,000 tons.

From the general economic point of view it may be said that oil and all other sources of power are very welcome as healthy competitors and additional suppliers of energy. The consumption structure will probably undergo further changes and everyone will watch with great interest the development of the practical industrial application of the atomic energy.

THE TASK AHEAD

The task lying before the European coal mining industries is enormous. They have now to provide 75 per cent to 80 per cent of the total heat and power needed in Europe and are still called upon to increase steadily their capacity in order to take due part in satisfying the growing requirements. Although by nature the progress in the coal mining industry must be slower than the development of some other sources of power, solid fuel will remain for years to come the main source for providing a predominant part of power in all its forms and for all purposes. Great concerted efforts of employers and miners alike are expected, to im-

PRODUCTION, EMPLOYMENT AND OUTPUT PER MANSHIFT
IN EUROPEAN COAL INDUSTRIES*
in 1938 and 1953
(Metric tons)

Country	Year	Production		Employment†		Output per manshift	
		Mill. tons	Difference	Thous. men	Difference	Overall	Difference
GREAT BRITAIN	1938	230.6	14.7	782	65	1.158	0.081
	1953	215.9‡	— or 6.3%	717	— or 8.3%	1.239	+ or 7%
WEST. GERMANY	1938	136.9	12.5	321	114	1.500	0.396
	1953	124.4	— or 9.1%	435	+ or 35.5%	1.104	— or 26.4%
HOLLAND	1938	13.5	1.2	31	17	1.774§	0.429
	1953	12.3	— or 8.8%	48	+ or 55%	1.345§	— or 24.2%
FRANCE	1938	46.5	6.1	232	3	0.825	0.101
	1953	52.6	+ or 13.1%	229	— or 1.3%	0.926	+ or 12.2%
SAAR	1938	14.4	2.0	44.4	13.7	1.176	0.094
	1953	16.4	+ or 13.8%	58.1	+ or 30.8%	1.082	— or 8%
BELGIUM	1938	29.6	0.5	148	8	0.782§	0.016
	1953	30.1	+ or 1.6%	156	+ or 5.4%	0.766	— or 2%
POLAND	1938	69.4	19.2	139	91	1.738	0.308
	1953	88.6	+ or 27.8%	230§	+ or 65.4%	1.430§	— or 17.7%
CZECHO-SLOVAKIA	1938	15.8	4.5	47	—	1.116	—
	1953	20.3§	+ or 28.4%	—	—	—	—

† Number of employees at end of the year. Employment and production figures refer to deep mined coal only.

‡ Excluding 11.9 million opencast coal.

§ Estimated.

* Source: Quarterly Bulletin of Coal Statistics—Vol. II, No. 4—Geneva, March 1954.

prove productivity and lower the production costs and prices in order to meet the competition of oil, natural gas and hydro-electricity. It will be a healthy competition in the interest of all consumers everywhere.

To achieve all these ends a very close co-operation between producing and consuming countries in the field of production, efficient utilization and marketing along well-proved and established international lines in Geneva, Paris and Luxemburg has to be continued and strengthened.

PRODUCTION, EMPLOYMENT AND PRODUCTIVITY TRENDS COMPARED

Comparing the production trend in the main European coal producing countries after the war, it will be observed from the figures as compiled in the table below that the prevailing conditions varied greatly, chiefly in respect of manpower and output per manshift in consequence of war disruptions caused also in the development works of the mines.

In Western Europe France shows the best results. She succeeded in increasing her production by more than 13 per cent with a decreased manpower of 1.3 per cent and she improved her output per manshift by 12 per cent. The Saar and Belgium also increased their production but only through increased manpower. The overall output per manshift is slightly below that of 1938.

Western Germany and Holland in spite of increased manpower by as much as 35 per cent and 55 per cent respectively are still lagging behind their pre-war production by nine per cent. The output per manshift is also 25 per cent below that of 1938.

Great Britain is in the unique position among the European coal producers in that she is short of 65,000 miners or eight per cent as compared with 1938. She has reached in 1952 the 1938 production level of 230,000,000 tonnes only by including 12,000,000 tons of opencast coal. The shortage in deep mined coal in 1953, however, is 14,700,000 tons or 6.3 per cent. This could not be made good by the improved O.M.S. of seven per cent, and still greater efforts are required to meet the growing consumption needs at home and at the same time to maintain the necessary minimum exports.

Poland and Czechoslovakia were fortunate enough in having mustered the necessary manpower from the beginning. As regards Poland the manpower rose by as much as 65 per cent—the highest rate among the major coal producing countries which includes some 20 per cent of female workers at the surface. The overall output per manshift was estimated in 1953 to have improved to a level of 18 per cent below pre-war.

The geological conditions and size of the Silesian and Dombrowa basin are comparable with those of the combined Yorkshire and East Midlands Divisions.

The total hard coal production of all European countries according to the same statistics amounted in 1953 to 587,800,000 tonnes which is 22,000,000 or 3.9 per cent more than the production level of 565.4 of those countries in 1938.

OUTLOOK FOR SOLID FUELS

However, as regards 1954 it was recently estimated by the Coal Committee in Geneva that in order to satisfy all present requirements in Europe a total production of about 621,000,000 tons would be needed, of which about 500,000,000 should be produced in Western Europe and 121,000,000 in Eastern Europe, here mainly by Poland—93,000,000 and by Czechoslovakia—22,000,000. There would still be a deficit in the requirements of Western Europe of 11,000,000 tons, which would have to be met by supplies from the U.S.A. and Poland.

New Phosphate Plant Producing Uranium

The largest miner of phosphate rock in the Western Hemisphere, the International Minerals and Chemical Corporation, Chicago, Illinois, has placed in operation a new \$15,000,000 phosphate chemicals plant near Bartow, Florida, which in addition to turning out phosphate chemicals is also producing uranium compounds as a by-product for the U.S. Atomic Energy Commission.

Although the quantity of uranium that may be expected to come from such sources falls into the category of "classified information," the Atomic Energy Commission has gone on record as declaring that "the amount of uranium in phosphate rock is a goal worth shooting for." At the present time the United States is dependent on foreign shipments for a major portion of its uranium supplies. The principal foreign sources are Canada, the Belgian Congo, and the Union of South Africa. Australia is a promising new potential source. Currently, the most important domestic production comes from the Colorado Plateau area where there are a number of mills which concentrate and extract uranium from carnotite-roscoelite type, vanadium-uranium ores and other ore types as sufficient reserves are developed.



Aerial view of International Minerals and Chemical Corporation's Noralyn Plant

The Bartow plant is the first of its kind in Florida. However, two other companies, the Blockson Chemical Company of Joliet, Illinois, and Texas City Chemicals Inc., Texas City, Texas, also are producing uranium from Florida-mined phosphate rock, in plants outside of the State. Meanwhile, a fourth company, Virginia-Carolina Chemical Corporation, is expected shortly to begin making uranium at Nichols, Florida.

At the International Minerals plant the uranium compounds are recovered as an intermediate step in the production of multiple superphosphate, which is applied to phosphorous-deficient soil, and dicalcium phosphate, which is used as a phosphate mineral supplement in animal feeds. The by-product uranium recovery unit is the first facility to recover uranium from phosphate on a commercial scale in Florida.

International Minerals expects that its new Florida facility will produce 100,000 tons a year of dicalcium phosphate, according to Louis Ware, president of the corporation.

REVIEWS

Canadian Mines Handbook, 1954.—Northern Miner Press Ltd., 122 Richmond Street, West Toronto. Pp. 352. No price stated.

Canada's mining industry continues to show expansion and growth on many fronts.

The search for new mines continues at a strong pace with emphasis this year on uranium, copper, and nickel. Production totals may be down in some instances—those of lead and zinc, for example—but the overall total, thanks largely to oil, will probably set a new all-time record.

These facts are revealed in a study of the 1954 edition of the *Canadian Mines Handbook*, just published, a survey which shows that mining is still one of the leading factors in Canada's sensational rise to industrial and mercantile prominence.

The development headlines of 1954 are being written in many camps, some of them brand new: in Manitouwadge, unknown a year ago but now headed toward copper-zinc production; in Blind River and Bancroft, busy uranium areas where many promising prospects are active; in the iron ore fields of Labrador-Quebec, now coming into long-promised production; in Sudbury, where big new nickel-copper mines are being boldly developed; in Lynn Lake, where Sherritt Gordon has become Canada's most northerly nickel-copper producer; in Granduc, where a major copper mine appears probable; in Beaverlodge, where Gunnar is moving toward major mine status; in Bathurst, by which New Brunswick is now assured of importance as a mining province; in Yukon, where big time capital is finding ore in many areas; and in many other camps, some old, some new, from coast to coast.

The number of producing mines shows little change from that of a year ago. A few marginal gold and base metal mines have fallen by the wayside, but a gratifying group of new mines has come into production. Promising, too, is the list of big mines either approaching production or expanding.

The 1954 *Canadian Mines Handbook* lists just over 900 active companies, approximately the same number as in 1953. Almost 200 new companies were formed during the year, while 44 inactive organizations revived, but a corresponding number of companies have become idle. The book's inactive section lists more than 7,600 companies, to make a total compilation of more than 8,500 mining company names.

Included as usual are the special sections: "Metal Mines Classified," in which producers of each of the principal metals are listed; and the eight-year range of mining share prices.

British Standards 1954 Year Book.—British Standards Institution, British Standards House, 2 Park Street, London, W.1. Pp. 500 with index. Price 12s. 6d.

The 1954 edition of *British Standards Yearbook*, now published, should prove as indispensable as its predecessors to all engaged in industry, commerce and scientific research.

The *Yearbook* lists no fewer than 2,500 British Standards current at March 31, 1954, and gives a brief description of the subject matter of each. A comprehensive index simplifies reference.

The usual information on the membership of the Institution's General Council, Divisional Councils and Industry Standards Committees is given, together with the names of representatives on the main Special Committees and Advisory Committees. Particulars of the work in hand of all the Industry Standards Committees are also given.

Fifth Annual Report Exchange Restrictions, 1954.—Published by The International Monetary Fund, Washington. Pp. 367.

The report is divided into two main sections. Part I describes the main developments in exchange restrictions which have taken place in the world since May, 1953, and outlines the present position, mentioning the progress made in the past twelve months in lessening such restrictions. As in previous reports, Part 2 consists of short descriptions of the exchange systems of those member countries still availing themselves of the provisions of Article XIV of the Fund Agreement.

Machinery and Equipment

Moxey Conveyor and Transporter Company Secures £1,250,000 Ore Handling Plant Contract

Moxey Conveyor and Transporter Company of Birmingham, have secured a contract valued at approximately £1,250,000 to supply ore handling plant to the Cardiff works of Messrs. Guest, Keen Iron and Steel Company.

The contract, which is probably the largest of its kind ever placed in this country, comprises plant for the handling of iron ore at the rate of 1,500 tons per hour from the dockside cranes to the main storage bunkers from where the ore will be conveyed to the crushing plant and to a stockyard 1,000 ft. long. After reclaiming from stock, the ore will be conveyed to a screening station and finally to the blast furnace bunkers or stockyard.

The plant, which includes the conveying, crushing, and screening of incoming limestone, basic slag, and coke, will also involve belt conveyors having a total length of nearly two miles.

The Moxey Conveyor and Transporter Company are associated with Messrs. Clarke Chapman and Co., the mechanical and electrical engineers.

Japanese Mining Equipment for Malayan Iron Mine

It has been announced from Tokio that a five-man Japanese research mission is leaving for Malaya shortly to make a three month survey of the Temanggan iron ore mine to be jointly managed by Anglo-Japanese interests—the two British companies involved being the Boustead Company and the Andrew Weir Company.

An official of the Kokan Kogyo Company said that machinery and equipment, valued at ¥1,000,000,000, required for the development, would be exported by Japan's major iron and steel makers such as Yawata, Fuji and Japan Steel Tube, and that the payment for the equipment would be made in ore to the steel firms.

Cable Orders from Russia

Crompton Parkinson announced earlier this week the successful completion of negotiations with Rasnoimport, of Moscow, for two contracts valued at approximately £1,700,000 to supply paper insulated cable and wire to Russia.

Aberdare Cables (Holdings) announced this week the receipt of an export licence from the Board of Trade for a large contract for copper wire place by Rasnoimport. Aberdare Cables has already supplied substantial quantities of paper insulated power cables to the U.S.S.R.

It is understood that more than half of the Crompton Parkinson order is for copper wire and this contract, together with an order obtained earlier this year, brings this company's contracts for electrical equipment to Russia up to about £2,500,000.

International Harvester's New Tractor

The International Harvester Company is planning to put on the market this month a torque and converter crawler tractor which it claims is the most modern and powerful in the world. The new machine automatically provides the needed pushing power at required speeds without changing gears, the speed and power being made available merely by advancing the throttle. This machine is already in full production.

Thos. Storey (Engineers) Ltd. Appointed Sole U.K. Agents For Lorrain Equipment

Thos. Storey (Engineers) Ltd., of London, have been appointed sole agents in the British Isles for Lorrain equipment—the products of the Thew Shovel Company of Lorraine, Ohio, U.S.A. Storey's will be the selling agents and will provide a spare parts repair service for the equipment which includes a range of mobile cranes 4 tons to 60 tons and excavators up to 2½ cu. yds.

METALS, MINERALS AND ALLOYS

COPPER.—The New York price is as firm as ever at 30 c. per lb. Some large producers have sold all their August production and are taking orders for September metal; mid-August sales exceeded 70,000 tons against only 58,000 tons by mid-July. September, too, is expected to be a good month.

The background to this firmness is, of course, the industry's labour problems which now seem to be almost world-wide. Latest information on the situation at Braden's El Teniente mine was that the 7,000 workers were adhering to their intention of striking on August 19 unless they had previously been granted a wage increase of 75 per cent. No offer of this size has been made or is likely to be made. Forty per cent of Chilean production would be affected. Senor Uribe, Minister of Mines, it is reported, has on the one hand told leaders of the Copper Labour Confederation that the Government will make no further sacrifice of revenue to settle labour disputes and, on the other, has asked Braden Copper Company to settle the dispute favourably because "the company was in a good condition to comply." If these reports are correct this is a neat piece of buck-passing; but it is a buck that is not so easily got rid of. Even if Braden could afford a 75 per cent rise this increase in wages would simply strengthen the inflation which for years past the Chilean Government has failed to control.

In the United States, Phelps Dodge Refining Company has made a two-year contract covering the Laurel Hill smelter and copper refinery. In contrast, strikes have broken out at Kennecott's holdings in Utah, New Mexico, Nevada and Arizona following the breakdown of wage negotiations. About 1,700 tons of copper are being lost daily as a result. Negotiations have also been broken off between the International Union of Mine Mill and Smelter Workers and Anaconda Copper Mining and America Smelting and Refining Corporation. Add to these difficulties the continuing disagreement on African advancement in the Copperbelt and there seems to be good grounds for believing that 30 c. per lb. will hold firm. The probability is, with nearby supplies remaining tight, that any further interruption of production would edge the price up.

The German company Montan G.M.B.H. has offered to co-operate with the Chilean Ministry of Mines in constructing a copper refinery with a capacity of 30,000 tonnes to serve the medium and small mines. It is understood that Montan has offered \$2,000,000 in machinery if Chile will supply 250,000,000 pesos in buildings. Chile has counterbid with an offer of five year repayment if the Germans can finance the whole deal; Montan is now considering this second offer.

LEAD.—A report from Washington suggests that a decision on the recommendation of the Tariff Commission for higher import duties on lead and zinc is being held up because of a basic conflict of opinion within the Administration. (It is worth recalling that the President had 59 days to consider the matter before announcing he wanted more time.) According to this report President Eisenhower and Secretary of State, Mr. Dulles, are both opposed to higher duties because they run counter to the trade liberalization policy towards which the Administration is leaning. The hand of the high tariff adherents must be strengthened by the obvious difficulty of finding an alternative solution. As Representative Pfof recently said in the House, present stockpile purchases are only enough to stop the bottom from falling out of the market and has not yet permitted a single closed mine to re-open. Mrs. Pfof, herself, recommended long term floor price contracts with the Government buying metal till such time as the market price rose above the contract price when the metal could be sold to normal trade channels. It would be interesting to see whether President Eisenhower would feel able to adopt such a domestic price support programme for lead and zinc after refusing to join an international tin scheme. But if he has truly set his face against tariff increases and shrinks from the expense—as surely he must—of putting the industry on its feet by straightforward stockpiling then it is on some such scheme as this that he must fall back. Present opinion is that he will make up his mind one way or another in the latter part of September. Meanwhile the New York lead market continues quiet and featureless. The report of long lay-offs by car manufacturers during the change to new models is not a good augury for the car battery trade.

TIN.—It is reported from Malaya that a majority of Malayan tin producers have voted in favour of accepting the French proposals that the ceiling price under the International Tin Agreement should be reduced from £880 to £840 a ton. The voting was: not opposing 57.7 per cent; opposing 28.8 per cent, abstaining 13.5 per cent. The result was reported to the Federal Legislative Council on August 18 when it was also voted to ask the United Kingdom Government to ratify the Agreement on Malaya's behalf. During the debate there was much criticism of the French action and of "secret clauses" and "private understandings." The Federal Minister of Economic Affairs replied that he believed the United Kingdom Government did not welcome the French attitude any more than Malaya. There is no definite news of what action Belgium will take. Although Belgium has promised to support the French claim for a ceiling reduction before the International Tin Council she has coupled with it the condition that there should be a corresponding rise in the floor price so that the average price would remain unchanged. Belgian support for the French proposal has in fact been given only grudgingly because the present floor is believed to be lower than the payability level of most of the mines in the Congo and Ruanda Urundi.

ZINC.—Zinc continues in its depressed state at 11 c. per lb. East St. Louis. The price is maintained only by the monthly stockpile purchases and the hand to mouth buying of consumers shows that they know it. The Bureau of Mines consumption figures for June show an increase of about 4,000 tons to 74,665 tons. All major industries shared in this slight increase. Consumption for the first six months was 420,000 tons compared with 533,000 tons for January-June, 1953. The tonnage of slab zinc used in brass products was roughly halved for January-June, 1954. On the other hand stocks of slab zinc at consumers' plants rose by 6,000 tons in June to 94,529 tons compared with 88,800 tons on May 31.

MANGANESE.—The Indian Government has announced the abolition with immediate effect of the 15 per cent ad valorem export duty on manganese ores with a view to improving its competitive position on international markets.

Earlier this year the Madhya Pradesh Mineral Industry Association urged the Government to reduce the export duty as a measure of relief to the mineral industry which was "in a state of crisis." The Association said that if the Indian ore was to compete successfully in the international market the export duty of 15 per cent ad valorem should be abolished altogether or reduced considerably.

QUICKSILVER.—Despite the unbroken rise in the price of quicksilver from £61 15s. per flask at the beginning of the year to £100 per flask—the price ruling since July 12—and the still difficult supply position, the general consensus of metal market opinion in London seems to be that the price will remain steady for the time being.

The supply position is somewhat confused as only scant details are available as to the reaction from Mexico to G.S.A.'s offer to purchase 75,000 flasks by December 31, 1957, at a price of U.S. \$225 per flask. However, it was reported at the end of last week that one of Mexico's two leading producers had decided to accept the offer. But this has not been taken as a guide to what decision the other producers will take. The real problem for the Mexican producers—the industry is made up of hundreds of small producers who normally deal through the various selling agencies in the country—is that they will have to decide whether to take advantage of the guaranteed price of \$225 per flask from the G.S.A. for the ensuing two-and-a-half years or to sell on the world market which currently is offering a price of around \$290 per flask.

TITANIUM AND ZIRCONIUM.—That the U.S. Government should no longer undertake the commercial production of titanium and zirconium which are said to be extremely important in the defence programme were among the recommendations made by a five-man survey team for a major reorganization of the United States Bureau of Mines. See Notes and Comments.

It is understood that the Secretary of the Interior has approved these recommendations which also included the turning over to

private enterprise the production of helium over which the government has exercised control for over 30 years.

A stimulus to U.S. producers of titanium has been the Office of Defense Mobilization's offer to issue rapid tax amortization allowances to companies who complete their plant constructions by the end of 1956. This incentive has been given to assist the achievement of the government aim to attain its interim expansion goal calling for plant capacity to process 37,500 tons of titanium ingot annually by that time. At present there are no processing facilities in the United States specifically designed to produce titanium mill products and titanium producers have had to rely on stainless steel production facilities for the manufacture of titanium rods, sheets, bars, and other forms.

Iron and Steel

A drop of 22,000 tons in the weekly output of pig iron last month and of 108,600 tons in the output of steel was vastly more severe than had been anticipated. It is accounted for by the extension of the workers' holiday with pay from seven to fourteen days, the brief last disastrous strike in South Wales, and "mechanical difficulties" at a new steel plant on the North-East Coast.

Curiously, this sharp decline has synchronized with an unprecedented boom in steel production in the countries of the European Coal and Steel Pool, where a new record of 381,300 tons was attained last month. It is affirmed, moreover, that the high July production was considerably exceeded by the tonnage of orders booked.

From this it may be deduced that there will be no more price cutting by European competitors in foreign markets and that the restoration of the British steel industry to full-scale activity after the holidays will be rapid. Certainly home requirements are on an exceptionally heavy scale and these are supplemented by increasing demands from overseas, more particularly from Australia and Canada.

It is claimed that in spite of the sharp drop in pig iron production last month, the aggregate output was the highest ever for the month of July. Be that as it may, very much more pig iron is needed not only for the steel furnaces, but also for certain branches of the foundry trade.

For the steel makers there is not a cloud on the horizon. Even the re-rollers are now participating in the revival. Orders for small bars and light sections are heavier than they have been for 18 months, and British makers are able to supply all the steel series required without recourse to increased imports.

Demand for nearly all classes of finished steel products is overwhelming. Sheet makers are now quoting for deliveries in the first quarter of next year, and similar conditions are also developing for the mills engaged in heavy sections, joists and plates.

The London Metal Market

(From Our Metal Exchange Correspondent)

The London tin market has been quiet without any violent price movements, consumers' demand not yet having got into its stride after the holidays which are about ending. There has been a further increase in warehouse stocks, and the quotations for cash and forward tin are about level. The result of its stride after the holidays which are about ending. There has been a further increase in warehouse stocks and the quotations for cash and forward tin are about level. The result of fied. In Kuala Lumpur the Federal Legislative Council agreed on August 18 to ask the British Government to ratify the International Tin Agreement on behalf of Malaya. In America consumers show very little interest in covering their requirements, and prices have tended to sag. On Thursday morning the Eastern price was equivalent to £735 per ton c.i.f. Europe.

Copper prices in the London market have made some recovery. Continental enquiry is well maintained, and metal for early arrival seems scarce. Electrolytic copper for end August shipment is available, but, as the price asked is linked to the American quotations, it is above Continental ideas and consequently business is somewhat restricted. In the U.S.A. book-

ings are being maintained on a good scale, and the strike at Kennecott is reported to affect production by some 1,700 tons daily.

Lead has continued a firm market with some evidence of buying from time to time for Russian account, although they do not seem inclined to chase the market. Mr. Eisenhower and Mr. Dulles are understood to be strongly against raising the import duties on lead and zinc as being contrary to the Administration's free trade policy. On the other hand, it is said that the President cannot turn down the Commission's proposals unless some alternative action to help the mining industry can be found. An inter-Administration tussle seems to be in progress on this question.

Zinc is quiet here, and in America demand has been meagre.

Closing prices and turnovers are given in the following table:—

	August 12		August 19	
	Buyers	Sellers	Buyers	Sellers
Tin				
Cash.....	£724½	£725	£730	£731
Three months.....	£725	£725½	£729	£730
Settlement.....		£725		£731
Week's turnover....		620 tons		440 tons
Lead				
Current month.....	£95½	£96	£97½	£98
Three months.....	£93	£93½	£95	£95½
Week's turnover....		1,800 tons		3,950 tons
Zinc				
Current month.....	£74½	£74½	£74½	£74½
Three months.....	£74½	£74½	£74½	£74½
Week's turnover....		3,175 tons		2,500 tons
Copper				
Cash.....	£234	£234½	£236½	£237
Three months.....	£233½	£233½	£235½	£235½
Settlement.....		£234½		£237
Week's turnover....		3,425 tons		4,425 tons

OTHER LONDON PRICES — AUGUST 19

ANTIMONY

English (99%) delivered,		
10 cwt. and over	£210	per ton
Crude (70%)	£200	per ton
Ore (60% basis)	22s./24s. nom.	per unit, c.i.f.

NICKEL

99.5% (home trade)	£483	per ton
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OTHER METALS

Aluminium, 99.5%, £156 per ton	Osmium, £50 oz. nom.
Bismuth	Palladium, £7 10s. oz.
(min. 2 cwt. lots) 16s. lb.	Platinum, £30/£31
Cadmium (Empire), 12s. lb.	Rhodium, £42 oz.
Chromium, 6s. 5d./7s. 6d. lb.	Ruthenium, £22 10s. oz.
Cobalt, 21s. lb.	Quicksilver, £100
Gold, 249s. 3d. f.o.z.	ex-warehouse
Iridium, £45 oz. nom.	Selenium, 35s. 9d. nom.
Magnesium, 2s. 6d. lb.	per lb.
Manganese Metal (96%-98%)	Silver 73½d. f.o.z. spot and
£225/£262	73½d. f.d.
Osmiridium, £40 oz. nom.	Tellurium, 15s./16s. lb.

ORES, ALLOYS, ETC.

Bismuth	65% 8s. 6d. lb. c.i.f.
	60% 8s. 3d. lb. c.i.f.
Chrome Ore—	
Rhodesian Metallurgical (lumpy)	£13 12s. per ton c.i.f.
Refractory	£13 4s. per ton c.i.f.
Magnesite, ground calcined ..	£26-£27 d/d
Magnesite, Raw	£10 - £11 d/d
Molybdenite (85% basis) ..	102s. 4d.-103s. per unit c.i.f.
Wolfram (65%)	World buying 180s./185s. nom.
"	U.K. Selling 187s. 6d. + 10s. charges
Scheelite (65%)	World buying price nom.
"	U.K. Selling 187s. 6d. + 10s. charges
Tungsten Metal Powder ..	17s. nom. per lb. (home)
(98% Min. W.)	
Ferro-tungsten	14s. nom. per lb. (home)
Carbide, 4-cwt. lots	£37 6s. 3d. d/d per ton
Ferro-manganese, home ..	£54 15s. 0d. per ton
Manganese Ore Indian c.i.f. Europe	
(46%-48%)	68d./70d. per unit nom.
Brass Wire	2s. 6d. per lb. basis
Brass Tubes, solid drawn ..	1s. 10½d. per lb. basis

(By Our Stock Exchange Correspondent)

The most activity was again in the Orange Free State. Central Mining Free State Areas rose to 7s. Market opinion held that the company's interest in Harmony had been insufficiently discounted in the share price. There was some speculative buying of the Freddie group. Free State Geduld were a feature due

Miscellaneous base metals were rather quiet with some South African stocks lower on account of the rail transport difficulties in the Union. Consolidated Murchison, however, were once again well supported and touched £3 before reacting.

FINANCE	Price Aug. 18	+ or - on week	O.F.S.	Price Aug. 18	+ or - on week	MISCELLANEOUS GOLD	Price Aug. 18	+ or - on week	TIN (Nigerian and Miscellaneous) contd.	Price Aug. 18	+ or - on week
African & European.....	7 3/8	+ 3/8	Freddies.....	21 1/2	+ 1/6	(contd.).....	17/-	+ 3d	Geevor Tin.....	12 1/2-XD	+ 3d
Anglo American Corpn.....	8 1/8	+ 1/8	Freddies Consolidated.....	21 1/2	+ 1/6	St. John d'el Rey.....	37/9	-	Gold & Base Metal.....	2/10 1/2	-
Anglo-French.....	23/9	+ 2/6	F. S. Geduld.....	5 1/2	+ 1/2	Zams.....	37/9	-	Jantar Nigeria.....	8/9	- 3d
Anglo Transvaal Consol.....	26/3	+ 2/6	Geoffries.....	17/-	+ 1/9	DIAMONDS & PLATINUM			Jos Tin Area.....	13/6	- 1 1/2d
Central Mining (£1 shrs.).....	41/3	+ 3/4	Harmony.....	39/6	- 6d	American American Inv.....	6 1/2	-	Kaduna Prospector.....	2/3	- 3d
Consolidated Goldfields.....	53/9	+ 2/3	Loraine.....	13 1/2	- 4 1/2d	Casts.....	27/3	+ 3d	Kaduna Syndicate.....	6/3	- 3d
Consol. Mines Selection.....	38/9	+ 1/6	Lydenburg Estates.....	20/-	+ 1/6	Cons. Diam. of S.W.A.....	6 1/2	-	London Tin.....	2/3	+ 1 1/2d
East Rand Consols.....	3/10 1/2	+ 6d	Merriespruit.....	13/3	+ 1/6	De Beers Delft. Bearer.....	17/-	-	United Tin.....	3/3	-
General Mining.....	4 1/2	+ 1/8	Midde Wits.....	16/6	+ 10 1/2d	De Beers Pfd. Bearer.....	17/-	-			
H.E. Prop. 5/- Shares.....	10/9	+ 9d	Ofists.....	73/3	+ 3d	Pots Platinum.....	9/6	- 6d	SILVER, LEAD, ZINC		
Henderson's Transvaal.....	7/3	+ 3d	President Brand.....	73/9	+ 3d	Waterval.....	15/9	- 9d	Broken Hill South.....	51/6	+ 1/-
Johnnies.....	49 1/4 XD	- 7 1/2d	President Steyn.....	49/-	+ 3/3	COPPER			Burma Mines.....	2/3	-
Rand Mines.....	45/-	+ 1/2	St. Helena.....	16 1/3	+ 10 1/2d	Chartered.....	80/3	- 3d	Consol. Zinc.....	45/-	+ 9d
Rand Selection.....	45/-	+ 1/2	Virginia Ord.....	24/-	+ 2/6	Indian Coppr.....	4/9XD	+ 4d	Lake George.....	6/6	- 3d
Strathmore Consol.....	44 1/4	+ 1/2	Welkom.....	48 1/2	+ 2/6	Messina.....	4 1/2	-	Mount Isa.....	43/9XD	- 9d
Union Corp. (2/6 units).....	33/6	+ 1/-	Western Holdings.....	48 1/2	+ 2/6	Nchanga.....	8 1/2	-	New Broken Hill.....	27/6	- 6d
Vereeniging Estates.....	4 1/2	+ 3d	WEST AFRICAN GOLD			Rhod. Anglo-American.....	70/9	+ 9d	North Broken Hill.....	66/3	+ 2/3
Writs.....	39/9	- 3d	Amalgamated Banket.....	1/6	+ 1 1/2d	Rhod. Katanga.....	9/3	-	Rhodesian Broken Hill.....	11 1/2	-
West Wits.....	43/9	+ 3/9	Ariston.....	6/3	+ 1 1/2d	Rhodesian Selection.....	18/9	- 6d	San Francisco Mines.....	18 1/4	+ 4 1/2d
			Asanti.....	4/3	+ 1 1/2d	Rhokana.....	25/-	-			
RAND GOLD			Bibani.....	6/3	+ 1 1/2d	Rio Tinto.....	37 1/2	-	MISCELLANEOUS		
Blyvoors.....	36/3	+ 2/-	Bremang.....	1/9	-	Roan Antelope.....	18/6	- 6d	BASE METALS & COAL		
Brakpan.....	36/3	+ 10 1/2d	G.C. Main Reef.....	3/6XD	+ 3d	Selection Trust.....	45/-	+ 1/10 1/2	Amal. Colliers of S.A.....	46/-	+ 4 1/2d
City Deep.....	16/-	+ 1/-	Konongo.....	2/4d	-	Tanks.....	97/3	- 10 1/2d	Associated Manganese.....	47/4 1/2	+ 4 1/2d
Consol. Main Reef.....	41/3	+ 9d	Lyndhurst Deep.....	20 1/2	-	Thariss Sulphur Br.....	3 1/2	-	Cape Asbestos.....	23 7/8	- 10 1/2d
Crown.....	41/3	+ 1/10 1/2	Taru.....	1 1/3	+ 1 1/2d	TIN (Eastern)			C.P. Manganese.....	42/3	+ 3d
Daggas.....	27/-	+ 2/6	W. Selection & Dev.....	6/3	+ 1 1/2d	Ayer Hitam.....	27/-	-	Chas. Hutchinson.....	59 1/2	+ 5 1/2d
Doornkop.....	33 1/2	+ 1/10 1/2				Gopeng.....	8 1/2	+ 1 1/2d	Mashaba.....	3 1/2	+ 1 1/2d
Durban Deep.....	11/-	+ 6d				Hongkong.....	7/9	+ 1 1/2d	Natal Navigation.....	3 1/2	-
E. Deggud (-4/- units).....	28/6	+ 1/-				Ipo.....	16/6	-	Rhod. Monteolo.....	1/3	-
E. Rand Props.....	2 1/2	+ 1/8	AUSTRALIAN GOLD			Kambung.....	8 1/2	+ 1 1/2d	Turner & Newall.....	87/6	+ 1/-
Geduld.....	3 1/2	+ 1/8	Boulder Perseverance.....	8/-XD	+ 9d	Kepong Dredging.....	4 1/2	- 3d	Wankie.....	14/9	-
Govt. Areas.....	14/-	+ 9d	Gold Mines of Kalgoorlie.....	16/3	+ 6d	Kinta Tin Mines.....	10/3	- 3d	Witbank Colliery.....	4 1/2	-
Grootvlei.....	20/3	+ 1/3	Great Boulder Prop.....	9/10 1/2	+ 1 1/2d	Malayan Dredging.....	27 1/4	+ 1 1/2d	CANADIAN MINES		
Libanon.....	11/3	+ 1/3	Lake View and Star.....	15/6	-	Pahang.....	11 1/2	- 4 1/2d	Dome.....	\$28 1/2	-
Luipaards Vlei.....	23/3	+ 2/9	Mount Morgan.....	18/6	-	Pengkalen.....	9/-XD	-	Hollinger.....	\$33 1/2	-
Marievale.....	19/6	+ 1/-	North Kalguri.....	7/9	- 4 1/2d	Petaling.....	7/10XD	+ 3d	Hudson Bay Mining.....	\$88 1/2	+ 2 1/2
Monderfontein East.....	15/-	+ 1/2	Sons of Gwalia.....	6/-	- 6d	Rambler.....	17/-XD	+ 3d	International Dredg.....	\$81 1/2	+ 1 1/2
New Kleinfontein.....	12/6	+ 3d	Western Mining.....	14/6XD	- 6d	Siamese Tin.....	17/-XD	+ 3d	Mining Corp. of Canada.....	\$81 1/2	+ 1 1/2
New Pioneer.....	16/3	+ 3d				Southern Kinta.....	7/3	+ 3d	Noranda.....	\$137 1/2	+ 1 1/2
Randfontein.....	72/3	+ 2 1/3				S. Malayan.....	25/3	- 3d	Queumont.....	\$7 1/2	+ 1 1/2
Robinson Deep.....	17/3	+ 3d				S. Tronoh.....	10/6	+ 3d	Yukon.....	3/9	-
Rose Deep.....	14/6	+ 9d	MISCELLANEOUS GOLD			Sungei Kidil.....	9/9	- 3d	OIL		
Simmer & Jack.....	4/4	+ 10 1/2d	Cam and Motor.....	9/4	+ 6d	Sekka Taiping.....	5/4XD	+ 3d	Anglo-Iranian.....	15 1/2	- 3 1/2
S.A. Lands.....	21/3	+ 1/10 1/2	Champion Reef.....	4/9	+ 6d	Tronoh.....	25/3	+ 6d	Apex.....	27/6	+ 1/3
Springs.....	29/9	- 1/-	Falcon Mines.....	8/3	+ 6d	TIN (Nigerian and Miscellaneous)			Attcock.....	49/4 1/2	+ 1/3
Siltfontein.....	39/4 1/2	+ 4/-	Globe & Phoenix.....	24/-	-	Amalgamated Tin.....	14/9	-	Burmah.....	92/6	- 6/10 1/2
Sub Nigel.....	39/4 1/2	+ 6d	G.F. Rhodesian.....	6/4 1/2	+ 9d	Amalgamated Tin.....	23/9	+ 1/6	Canadian Eagle.....	32/6	- 6d
Van Dyk.....	4/-	+ 6d	London & Rhodesian.....	4/7 1/2	+ 3d	Blaisie.....	6/3	-	Mexican Eagle.....	32/6	- 13d
Venterspruit.....	12/6	+ 10 1/2d	Mysore.....	5/4	-	British Tin Inv.....	15/3XD	-	Shell (bearer).....	5 1/2	+ 3d
Vlakfontein.....	15/-	+ 3d	Nundydroog.....	6/6	-	Ex-Landa Nigeria.....	3/1XD	-	Trinidad Leasehold.....	24/6	+ 9d
Vogelstruisbult.....	13/3	+ 1/-	Oreogum.....	4/-	-				T.P.D.....	24/4 1/2	+ 17 1/2d
West Drienvlei.....	6/3	+ 1/2							Ultramar.....	28/3	-
W. Rand Consolidated.....	54/4 1/2	+ 2/6									
Western Reefs.....	52/3	+ 1/7 1/2									

COMPANY NEWS AND VIEWS

Inco Increases Earnings in first six months

It is announced by the International Nickel Company of Canada that consolidated net earnings in terms of U.S. currency for the six months ended June 30, 1954, amounted to \$32,586,185 after all charges, depreciation, depletion, taxes, etc. This compares with \$29,205,595 for the corresponding first six months of 1953. After preferred dividends, earnings per share on the common stock accordingly rose to \$2.16 as against \$1.93 in the preceding period.

Aluminium's Sales Down—Profits Up

The revenue from Consolidated Sales affected by Aluminium Ltd. during the first six months of 1954 fell to \$159,597,530 as compared with \$164,930,557 in the corresponding period of the previous year. This, however, was accompanied by a fall in the cost of sales which dropped to \$91,286,307 compared with \$99,247,793 previously. After providing for dividends paid by subsidiary companies and \$24,560,588 in capital cost allowances as against \$24,489,260 in the first six months of 1953, the company's consolidated net profit for this period was \$9,866,689 as against \$9,498,796 in the preceding period. In terms of earnings on the company's 9,021,718 shares outstanding this amounted to \$1.09 as compared with \$1.05 previously. Dividends declared during the first six months of the current year at a quarterly rate of (U.S.) 50 c. per share absorbed an amount of \$8,853,385 against \$8,406,936—the increase this year being due to the larger number of shares outstanding.

Gross sales achieved by Aluminum Company of Canada (Aluminium Ltd.'s principal subsidiary) during the first six months of 1954 declined to \$122,639,354 as against \$124,280,736 previously. Output of aluminium, however, rose to 270,031 s.tons as compared with 269,027 s.tons in the corresponding period a year ago. Production from the first potline of the new Kitimat Smelter in British Columbia was reached on August 3, and the second potline will follow in a few weeks' time.

Mawchi Mines Needs £450,000

The full report and accounts of Mawchi Mines, the tin and wolfram producer located in the Southern Shan States of Burma, show that operations during the year ended March 31, 1953, resulted in a loss of £34,232 as compared with a loss of £52,308 previously.

This loss was, of course, due to the mine being maintained on a caretaking basis following the disruption of normal activities which took place some time after the property was occupied by Karen rebel forces in 1948.

However, since the liberation of the company's property, last November by the Burmese Military Forces, it has been possible for a comprehensive survey to be made by the technical managers, New Consolidated Gold Fields, during the period March-May this year. From this investigation has emerged a programme based on the requirement that an amount of approximately £450,000 must be obtained to enable productive operations to be resumed.

The survey has revealed some interesting discoveries. Amongst these it is of exceptional note that, generally speaking, the mining equipment plant and mill, appears to be complete and in working order. But as regards the hydro-electric installation, both flumes will need new trestles and re-building of some of the bridges will have to be undertaken. In addition, an inspection of the aerial ropeway has shown that new ropes will be necessary.

A certain amount of deterioration has inevitably taken place in the underground workings and it is now estimated that ore reserves have declined to 616,500 tons containing 1.54 per cent tin and 0.75 per cent wolfram. Nevertheless, provided the position is no worse than is at present apparent, this tonnage will be available for mining. On the other hand, the downward trend in the values of ore reserve blocks below the third level, together with pre-war development results on the fourth and fifth levels, are "not at all encouraging," but it is possible that exploration at current horizons will reveal payable ore.

To attain the 1948 milling rate of about 3,000 tons per month, which, it is considered should now be the initial target, at least a year's work will be necessary; this depends greatly on the company's ability to recruit and train an entirely new labour force. It is interesting to recollect that in 1939 nearly

161,000 tons of ore (the plant's full capacity) were milled from which 5,564 tons of mixed concentrates were produced.

Boulder Perseverance Increases Revenue

An increase in the grade of ore milled (described as "purely fortuitous") by Boulder Perseverance during the year to March 31, 1954, was directly responsible for the improvement in the company's bullion revenue. Development footage accomplished during the year amounted to 5,843 ft. against 4,187 ft. previously and there was also an increase in ore reserves. Costs, due largely to increases in rail freight charges, rose by 1s. 7d. per s.ton treated.

Year to	Treated	Yield	Cost*	Bullion	Ore Reserves
Mar. 31	(tons)	(dwt.)	per s.ton	Revenue	tons Grade
			s. d.	£	(000) (dwt.)
1954	134,372	5.3	48 3	418,757	374.0 5.0
1953	134,737	5.0	46 8	411,032	337.0 4.9

* Including treatment costs

After taxation and expenses, figures from the parent company's profit and loss accounts show that net profit earned was slightly lower than that in the preceding period. Despite this, the distribution for the year was increased. This was considered justified in view of the conservative financial policy adopted over many years which has resulted in a position of unusual strength. A dividend of 12½ per cent was accordingly paid on the company's issued ordinary stock of £224,820 in units of 4s. each. This compares with 10 per cent for the previous year.

Year to	Total	Taxa-	Net	Divi-	To	Carry
Mar. 31	Revenue*	tion	Profit	dend	Reserve	Forward
	£	£	£	£	£	£
1954	420,804	25,461	16,228	15,456	2,500	6,185
1953	413,184	26,620	18,118	12,365	5,000	7,531

* Before £354,605 mining expenses (1953 - £343,433) and other expenses £24,510 (1953 - £25,013)

Figures from the consolidated accounts, which include the subsidiary company Kalgoorlie Enterprise, show net profits of £17,408 (1953 - £15,418)

At Kalgoorlie Enterprise Mines, in which the company holds 65.2 per cent, the tonnage treated during the year was 67,263 l.tons (61,960 l.tons) having a grade of 6.254 dwt. per ton as against 6.367 dwt. previously. At this mine ore reserves showed a slight increase to 278,500 tons (274,200 tons) the grade remaining at 6.2 dwt.

Bid for Rukuba Tin

Following investigations made by the Rukuba Tin Mines at their property in the Rukuba district of Northern Nigeria, which disclosed that the mine could no longer be operated by them at a profit, an offer of £4,000 cash for the property's buildings and other assets (apart from stocks of tin and columbite-bearing concentrates) made by "a local holder of adjacent areas," has been accepted and the sale completed.

A further offer of 3d. a share has now, however, been made for the company's issued capital in 15,000 2s. shares plus the value of the realizable assets (if any) after the company has provided for its liabilities. Accordingly, as Rukuba itself has no facilities, arrangements have been made with an associated company for the treatment of the stocks of columbite containing concentrates excluded from the above sale.

Meanwhile, it is not possible to forecast what may be the sale proceeds of the mineral content of these concentrates, nor, in consequence, whether the assets of the company after such sale will exceed its liabilities. As soon, however, as the necessary figures are available, a further circular will be issued.

July Returns from West Africans

Of the ten leading West African gold producers which appear in the table below, seven have now completed ten months' operations of their current financial years. It is therefore interesting to note that of these, although three only have increased their mill throughputs, six have raised the volume of gold produced; but only three of these six, however, show any appreciable gain in profits over the corresponding period of last year. The implication of this would appear to be that a higher grade of ore is being milled but rising costs or heavy development expenditures have enabled but few companies to make additional profits therefrom. Ashanti is perhaps a good example of this, for although a major programme of develop-

ment is in progress at the mine milling and production of gold are both running ahead of last year while profits are substantially lower.

Company	July, 1954			Months since year end	Current Financial Year Total to date			Last Financial Year Total to date		
	Tons (000)	Yield (oz.)	Profit (£000)		Tons (000)	Yield (oz.)	Profit (£000)	Tons (000)	Yield (oz.)	Profit (£000)
Amal. Bankett†	74	11,193	17.9	10	689	109,586	155.9	600	91,882	181.8
Ariston Gold	35	11,233	52.7	10	328	106,762	489.2	289	98,408	454.2
Ashanti	26	16,027	66.2	10	247	158,119	647.4	230	149,532	756.4
Bibiani (1927)	30	6,759	17.6	10	273	63,553	99.5	304	61,661	115.6
Bremang*	654	3,663	17.9	7	3,241	14,286	0.6	4,128	19,239	87.3
G.C.M. Reef	10	3,950	17.3	1	10	3,950	17.3	9	3,412	9.7
Konongo	3	3,159	14.9	10	28	28,515	130.2	25	22,880	105.4
Lyndhurst Deep.	1	1,148	5.8	10	10	11,693	56.5	10	10,506	52.8
Mariu Gold	40	4,254	18.4	10	391	38,017	127.9	420	40,253	127.7
T. & Abosso	27	5,726	2.1	4	108	23,518	15.4	100	14,314	49.0

* Cu. yd. dredged

Profit figures include premium revenue

† Including development expenditure

Indian Gold Returns—July

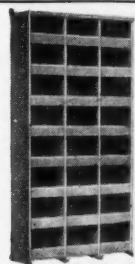
From the Kolar Goldfields again comes good news in respect of the month of July. For apart from Champion Reef, whose gold production has slipped back from its high June level, that for Mysore exceeded all previous results touching a new record gold production for one month. In addition, Nundydroog produced more last month than in June, which had previously been its best month since January. As will be apparent from the following table, all three producing mines are well up on last year's comparable figures.

Company	July, 1954			Months since year end	Current Financial Year Total to date			Last Financial Year Total to date		
	Tons (000)	Yield (oz.)	Profit (£000)		Tons (000)	Yield (oz.)	Profit (£000)	Tons (000)	Yield (oz.)	Profit (£000)
Champion Reef.	16	5,464	7	104	39,601	73	29,016	108	41,467	108
Mysore	18	7,085	7	124	47,437	108	41,467	141	39,509	15,683
Nundydroog*	22	6,909	7	150	43,172	141	39,509	60	15,683	
Ooregum	—	103†	7	—	932	60	15,683			

* Includes tailings

† Yield from clean-up only

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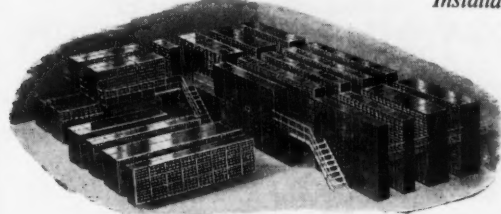


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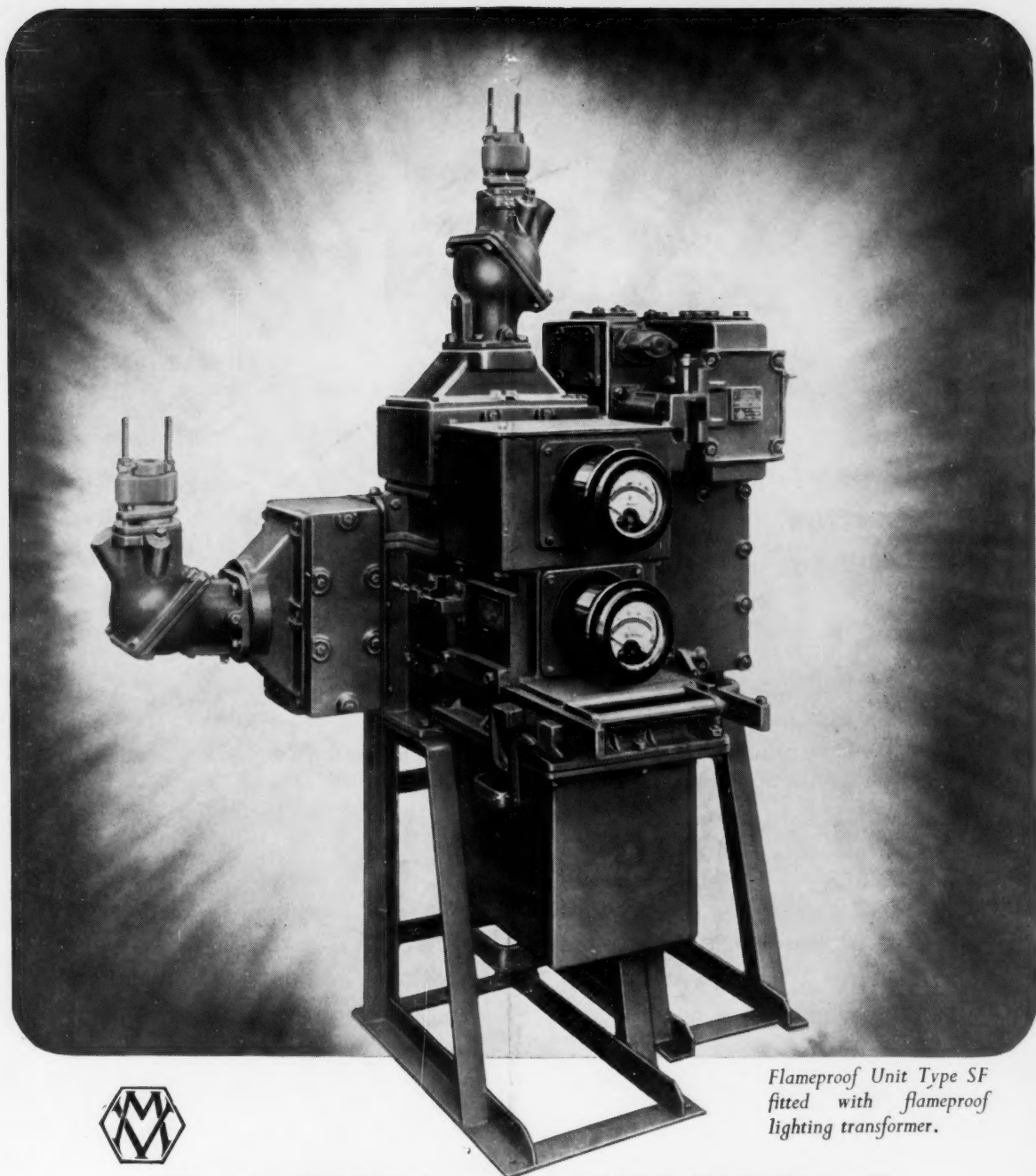
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